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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/653,039

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Ian M. Bennett

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J. NICHOLAS GROSS, ATTORNEY
2030 ADDISON ST.
SUITE 610
BERKELEY, CA 94704

EXAMINER

LERNER, MARTIN

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/653,039	Applicant(s) BENNETT, IAN M.	
	Examiner MARTIN LERNER	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 15 and 22 to 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 to 15 and 22 to 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/21/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

In view of the Appeal Brief filed on 12 May 2008, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, Appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office Action is non-final) or a reply under 37 CFR 1.113 (if this Office Action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then Appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 to 3, 6 to 9, 13, 22, 24 to 26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Crespo et al.* ('179) in view of *Braden-Harder et al.* ('822).

Concerning independent claims 1 and 22, *Crespo et al.* ('179) discloses a speech recognition system and method, comprising:

“a speech recognition engine for generating recognized words taken from an articulated speech utterance” – spoken language system 100 comprises a CSR (continuous speech recognition component) 120; input means 110 receives a spoken input in the form of a sentence which is passed to the CSR 120; acoustic phonetic information is fed to the CSR 120 in a conventional manner, typically to constrain the search space of the recognizer (column 6, lines 41 to 48: Figure 2);

“a natural language engine configured for linguistically processing said recognized words [to generate search predicates for said articulated speech utterance]” – spoken language system 100 comprises a NLU (natural language understanding component) 130 (column 6, lines 41 to 48: Figure 2);

“said natural language engine being further configured for linguistically processing said set of one or more corresponding recognized matches to determine a final match for said articulated speech utterance using both semantic decoding and statistical based processing performed on said recognized words” – language knowledge 150 includes both statistical information 160 and semantic information 170 for producing a meaning to CSR 120 and NLU 130 (column 6, lines 48 to 65: Figure 2).

Concerning independent claims 1 and 22, *Crespo et al.* ('179) does not expressly disclose that the natural language engine generates "at least two different types of search predicates for said articulated speech utterance" or "wherein said search predicates correspond to logical operators to be satisfied by a potential recognition match" or "a query formulation engine adapted to convert said recognized words and said search predicates into a structured query suitable for locating a set of one or more corresponding recognized matches for said articulated speech utterance". However, *Braden-Harder et al.* ('822) teaches:

"wherein said search predicates correspond to logical operators to be satisfied by a potential recognition match" – typically, a query contains one or more user-supplied keywords, and possibly Boolean (such as "AND" and "OR") or similar (such as numeric proximity) operators situated between keywords (column 2, lines 10 to 17); processor 30 analyzes a query as a logical form for semantic relationships between words in a linguistic phrase in a sentence (column 7, line 46 to column 8, line 6: Figure 1); a logical form is a "search predicate" and a "logical operator";

"at least two different types of search predicates for said articulated speech utterance" – "a first search predicate" is a full text query performed through the right branch of retrieval process 600 (column 15, lines 9 to 42: Figure 6A: Steps 610 and 635); "a second search predicate" is produced from a set of logical triples in a NLU routine 700 through the left branch of retrieval process 600 (column 15, lines 9 to 42: Figure 6A: Step 645);

“a query formulation engine adapted to convert said recognized words and said search predicates into a structured query suitable for locating a set of one or more corresponding recognized matches for said articulated speech utterance” – processor 30 compares a set of forms of the query against a set of logical forms associated with each of the documents in the set to ascertain any match between logical forms in the query set and logical forms for each document (column 7, line 46 to column 8, line 6).

Concerning independent claims 1 and 22, *Braden-Harder et al.* ('822) suggests an objective is to improve the accuracy of keyword-based natural language document searching. (Column 5, Lines 1 to 7) It would have been obvious to one having ordinary skill in the art to incorporate a system and method employing at least two different search predicates with logical operators into a structured query for locating corresponding matches as taught by *Braden-Harder et al.* ('822) into a search optimization system and method for continuous speech recognition of *Crespo et al.* ('179) for a purpose of improving the accuracy of keyword-based document searching.

Concerning claim 2, *Braden-Harder et al.* ('822) teaches “a first level query” is a full text query performed through the right branch of retrieval process 600 (column 15, lines 9 to 42: Figure 6A: Steps 610 and 635); “a second level query” is produced from a set of logical triples in a NLU routine 700 through the left branch of retrieval process 600 (column 15, lines 9 to 42: Figure 6A: Step 645).

Concerning claims 3 and 24, *Braden-Harder et al.* ('822) teaches that the operations in Step 645 are performed in parallel with the operations in Steps 610 and 635 (column 15, lines 48 to 53: Figure 6A); operation in parallel implies that the operations occur at the same time ("during a time" or "overlap in time").

Concerning claim 6, *Braden-Harder et al.* ('822) teaches a web browser 420 operating on a client computer 300 and a search engine 225 operating on a server computer 220 (column 8, lines 30 to 55: Figure 2).

Concerning claims 7, 8, and 26, *Braden-Harder et al.* ('822) teaches that logical form triples can be noun phrases (NP) (column 12, lines 39 to 65: Table 1; column 14, lines 41 to 49); documents with the highest score are obtained by matching logical forms of a query against a set of logical forms of each of the documents (column 7, line 55 to column 8, line 6); thus, noun phrases as logical form triples produce documents with the highest score ("said final match").

Concerning claim 9, *Crespo et al.* ('179) discloses a search optimization system for real time response (column 1, lines 21 to 26).

Concerning claim 13, *Braden-Harder et al.* ('822) teaches an ALTA VISTA search engine for accessing documents through the World Wide Web ("a web page") (column 8, lines 30 to 55: Figure 2).

Concerning claim 25, *Braden-Harder et al.* ('822) teaches "a preliminary query" is a full text query performed through the right branch of retrieval process 600 (column 15, lines 9 to 42: Figure 6A: Steps 610 and 635); "a final query" is produced from a set of logical triples in a NLU routine 700 through the left branch of retrieval process 600 and

comparing them against each of the logical forms of the documents retrieved from a full text query (column 15, line 64 to column 16, line 5: Figure 6A: Step 650).

Concerning claim 28, *Braden-Harder et al.* ('822) teaches retrieving documents from multiple servers (column 9, lines 13 to 22; column 10, lines 12 to 22; column 10, lines 41 to 49).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Crespo et al.* ('179) in view of *Braden-Harder et al.* ('822) as applied to claim 1 above, and further in view of *McDonough et al.*

Crespo et al. ('179) omits calculating a term frequency based on a lexical distance between each word and one or more topic queries, although this is merely one way of scoring similarity between words. However, *McDonough et al.* teaches topic discrimination for a speech recognition system, where one preferred method employs a Kullback-Liebler distance measure, providing a measure of dissimilarity of the occurrence patterns of an event for a given topic as opposed to all other topics. (Column 11, Lines 40 to 60) It is suggested that improved speech recognition can be achieved if a potential topic can be detected for a set of potential speech events. (Column 3, Line 63 to Column 4, Line 24) It would have been obvious to one having ordinary skill in the art to calculate a term frequency based on a lexical distance between words and one or more topic queries as taught by *McDonough et al.* in a search optimization system of *Crespo et al.* ('179) for a purpose of improving speech recognition by topic discrimination.

Claims 5, 14, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Crespo et al.* ('179) in view of *Braden-Harder et al.* ('822) as applied to claims 1 and 22 above, and further in view of *Appelt et al.* ('026).

Braden-Harder et al. ('822) omits context parameters for generating search predicates, SQL search predicates, and providing a match as an audible response. However, these are all well known features of interactive voice response (IVR) systems. Specifically, *Appelt et al.* ('026) teaches information retrieval by natural language querying, where documents are associated with a topic, e.g. joint ventures, education, medicine, or law. (Column 5, Lines 37 to 45; Column 6, Lines 62 to 67) A topic is equivalent to a "context parameter" for a search predicate. A query may be executed as an SQL query. (Column 6, Lines 13 to 26) Each user query can be entered verbally and recognized by speech recognition, and a result can be provided to a text-to-speech (TTS) system that translates the text to speech for the user to hear. (Column 13, Lines 9 to 17; Column 13, Lines 39 to 41) An objective is to provide search results, along with a concise summary, to users in a timely fashion, with high quality, properly packaged information that can assist users in making their decisions. (Column 4, Lines 22 to 34) It would have been obvious to one having ordinary skill in the art to incorporate the features taught by *Appelt et al.* ('026) involving topic parameters, SQL queries, and text-to-speech responses into an information retrieval system that employs natural language of *Braden-Harder et al.* ('822) for a purpose of presenting search results to users in a timely and high-quality package.

Claims 10 to 12 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Crespo et al.* ('179) in view of *Braden-Harder et al.* ('822) as applied to claims 1 and 22 above, and further in view of *Barclay et al.*

Braden-Harder et al. ('822) discloses a client/server information retrieval system (Figure 2), but omits distributing speech recognition across a client-server architecture, so as to optimize an amount of speech to reduce recognition latencies, and where more than 100 potential matches are determined in less than 10 seconds. However, distributed speech recognition in a client-server architecture is well known. Specifically, *Barclay et al.* teaches a client-server speech recognizer, where processing capabilities are distributed between the client and the server. (Abstract) A client digitizes speech, extracts features, and quantizes the features, and a server performs speech recognition. (Column 4, Lines 1 to 9) Latency is reduced because a server dispatcher accepts and buffers messages before the recognizer is ready to receive and process the messages. (Column 7, Lines 28 to 32) A real-time response is obtained. (Abstract) An application is to WWW browser queries involving an airline ticketing reservation form. (Column 8, Line 36 to Column 8, Line 30) Implicitly, real-time responses are produced in less than 10 seconds, and "notice" is taken that airline reservation applications involve more than 100 potential destinations. An objective is to process speech with large vocabularies and grammars in real time with a client computer being a laptop. (Column 4, Lines 10 to 16) It would have been obvious to one having ordinary skill in the art to incorporate the client/server architecture for distributed speech

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recognition of *Barclay et al.* into an information retrieval system of *Braden-Harder et al.* ('822) for a purpose of processing speech with large vocabularies and grammars in real time on a laptop.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Crespo et al.* ('179) in view of *Braden-Harder et al.* ('822) as applied to claim 1 above, and further in view of *Agarwal et al.* ('196).

Braden-Harder et al. ('822) omits a relational database that is updated asynchronously to reduce retrieval latency. However, *Agarwal et al.* ('196) teaches that it is common for relational databases to be updated in an asynchronous manner to avoid the inefficiencies of re-reading records. It would have been obvious to one having ordinary skill in the art to asynchronously update a relational database as taught by *Agarwal et al.* ('196) to search databases of *Braden-Harder et al.* ('822) for a purpose of avoiding inefficiencies of re-reading records.

Response to Arguments

Applicant's new arguments as set forth in the Appeal brief filed on 12 May 2008 have been considered but are moot in view of the new grounds of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARTIN LERNER whose telephone number is

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(571)272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM
Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Martin Lerner/
Primary Examiner
Art Unit 2626
May 22, 2008

/David R Hudspeth/
Supervisory Patent Examiner, Art Unit 2626